MEDICAL ADMINISTRATIVE GUIDELINES

Administrative Guidelines are Off-Line orders approved by the TFD Medical Director. These guidelines do not provide guidance for all possible medical or traumatic emergencies. I expect TFD EMS professionals to provide care to the best of their education, experience and within their full scope of practice. If prudent and reasonable practice dictates a deviation from these guidelines, TFD Paramedics or EMTs shall document the rationale. These Administrative Guidelines are designed to be closely aligned with current Southern Arizona Emergency Medical Services (SAEMS) Standing Orders.

Collaboration on the 2015 Administrative Guidelines pertaining to the specialty population interventions were provided by Joshua Appel MD, Deputy Medical Director and Dale Woolridge MD, Deputy Medical Director of Pediatrics.

Offline privileges are provided to the Tucson Fire Department Emergency Medical Care Technicians and may be revoked at the discretion of the Medical Director.

Terence D. Valenzuela, MD, MPH
Medical Director

TFD Administrative Guidelines Listing

Administrative Guidelines

BLS Care and Treatment

ALS Care and Treatment

Reference Cards

DEFINITION OF A PATIENT

A "**Patient***"* is defined as an individual who has a medical complaint, illness or injury that requires assessment, treatment and/or transport. A Patient should meet one or more of the following criteria:

- An acute medical chief complaint, signs or symptoms of illness or injury with an onset within the last 72 hours
- A chronic pre-existing condition that requires medical intervention
- Involved in a traumatic event with significant mechanism that could cause injury
- Disoriented or cognitively impaired appearance
- Behavior that exhibits or verbalizes suicidal or homicidal intentions

A caregiver/legal guardian with medical power of attorney and knowledge of the Patient's medical history/condition may request treatment and/or transport on the Patient's behalf.

If a Patient or responsible caregiver/legal guardian declines assessment, treatment, or ambulance transport despite EMS recommendation, the appropriate refusal type shall be documented.

DECISION MAKING CAPACITY/ REFUSAL THRESHOLDS

Decision Making Capacity

Patient or guardian must meet neurologic and cognitive criteria

Neurological Exam:

CAO x4: person, place, time, event
GCS ≥ 13
Pupils equal and responsive

Cognitive Screen: Patient must score 5/6. Missed question can only be day of month

6-Item Cognitive Screen		Incorrect	Correct
• I'm going to ask that you remember 3 words and I'll ask you some additional questions. • After I say all 3 words, please repeat them out loud, remember them, because I will ask you to repeat them again. • Repeat these words: **APPLE**, **TABLE**, **PENNY** • Did Patient repeat all 3 words? **YES** **NO**	• Year?	0	1
	• Month?	0	1
	• Day?	0	1
	• 3 objects?		
	Apple	0	1
	Table	0	1
	Penny	0	1

Refusal Thresholds

In order to refuse Assessment, Treatment or Transport, the following parameters must be met:

- Meet decision making capacity
- Able to verbalize an understanding of the risk(s) of refusal and accept responsibility for declining ambulance transport
- ≥ 18 years or be an emancipated minor ("Emancipated Minor" must appear on a government issued Driver's license or ID).
- < 18 years old, Parent/legal guardian must be contacted for verbal release to a delegated on-scene party willing to take responsibility for the Patient

RELEASE / REFUSAL

Persons meeting TFD definition of a Patient and that meets decision making criteria that refuses assessment, treatment and/or transport must be documented by using one of the following criteria:

Refuses Assessment

A Patient with a chief complaint, medical history or preceding event that refuses contact, assessment, care, treatment or transport despite EMS efforts.

Assessed; Refuses Treatment and Ambulance Transport

A Patient who presents with a chief complaint and/or medical condition is assessed and who meets the transport thresholds. The Patient refuses treatment and ambulance transport despite EMS recommendation.

Assessed and Treated; Refuses Ambulance Transport

A Patient who is assessed, receives treatment and continues to meet the transport threshold but refuses ambulance transport despite EMS recommendation.

*******Treat and Release*******

A Patient who is assessed and treated per Administrative Guideline (AG), responds favorably to treatment and no longer meets the transport threshold. The Patient and EMS mutually agree that transport is not required. AGs that support the Treat and Release Policy include: **DIABETIC / SEPSIS / SICK**, **NEURO / STROKE / SEIZURE**, **RESPIRATORY** and **TRAUMA / BURN**.

- Appropriate refusal must be documented
- Signature is required for refusal purposes.
- A Privately Owned Vehicle (POV) transport shall be considered a refusal of ambulance transport.
- A TFD Human Services Referral should be completed for any individual or family that has unmet medical, behavioral health or social service needs.

TRANSPORT OF AN IMPAIRED PERSON

Law Enforcement/POV

A person who appears disoriented and/or cognitively impaired under the influence of alcohol who does NOT meet the definition of a Patient (no complaint) who can protect their airway and is ambulatory and will not require a provider/Patient relationship and may be transported to a safe haven via law enforcement or POV.

(Person is talking and walking)

BLS

An impaired Patient under the influence of alcohol that meets the definition of a Patient requiring a provider/Patient relationship, who is non-ambulatory, can protect their airway and is within the **BLS** thresholds and may be transferred to **BLS** for transport to the closest most appropriate facility.

(Patient is talking but not walking)

ALS

An impaired Patient under the influence of alcohol who is unable to protect their airway or does not meet **BLS** thresholds is to be transported by **ALS** to the closest most appropriate facility.

(Patient is not talking and not walking)

*** *This guideline has been approved by both TFD and TPD medical direction*

TRANSPORT DESTINATIONS

Considerations: Patient choice, stable vs unstable, regional triage protocols, certified specialty centers or MCI/MMRS protocols.

Unstable Patient to closest facility. (symptomatic circulatory or respiratory compromise requiring immediate intervention from ED staff)

Patients ≤ 14 years requiring **ALS** care and/or **ALS** transport should be taken to a Pediatric Critical Care Facility (TMC or University Main) exception: Pediatric Pulseless and/or Apneic transport to the closest ED. *Sexual assault transport to TMC as first option*

Frequent User closest appropriate facility based upon chief complaint.
- HSRP to be completed.

Behavioral/Psychiatric Patients - Patient choice or closest facility.

Burn Patients meeting SAEMS Burn Criteria - contact University Main for burn consult for Patient transport or redirect

Injured Patients NOT meeting SAEMS Trauma Triage Criteria - Patient choice or closest facility

Pregnancy - Appropriate level of Perinatal Center
- < 20 weeks: Patient choice unless unstable
- 20 weeks to 32 weeks: University Main or TMC
- > 32 weeks: University Main, TMC, SJH, or NwMC

STEMI/Cardiac Arrest all Tucson EDs

All Patients with malfunctioning/misfiring internal cardiac device - transport to closest appropriate facility

Any malfunctioning external cardiac device (LVAD or Transplant Patient - transport to cardiac transplant center - University Main)

Stroke - all Tucson EDs, except University South Campus

Trauma - Trauma Triage Criteria contact University Main

- May consult with Trauma Center if Patient destination is in question.

HOSPITAL COMMUNICATIONS

Radio Telemetry for:

Patients meeting Trauma Triage Criteria contact University Main for transport destination

Significant deterioration in Patient condition

Specific / Unusual situations

eTelemetry is the primary means of transferring Patient information to a receiving hospital. All required fields shall be completed.

ALERTS should be indicated as applicable:

Bariatric - > 350 lbs.

Behavioral/Security - any Patient or situation that may require security assistance upon arrival to the ED

Infection Control - MRSA, VRE, TB, bed bugs, unidentified pediatric rash or suspected communicable disease

Respiratory - CPAP - CHF Patients - to alert Respiratory Department

Sepsis - (at risk Patient with 2 or more of the following)

- HR > 90bpm
- SBP ≤ 90mmHg
- RR > 20 breaths/min
- Temp > 102º F
- $EtCO_2$ < 32mmHg

STEMI - ST Segment Elevation MI identified by 12-lead

Stroke - Stroke onset time if < 6 hrs, FSBG & 12-lead

*** Check applicable boxes to indicate an Unstable Patient, EKG sent or that Spinal Motion Restriction is in place.

DETERMINATION OF RESUSCITATION

Reversible Conditions - Unless other signs of irreversible death are present, resuscitative efforts must be initiated when:

hypothermia secondary to submersion
drug OD
exposure
electrocution
return of ROSC
a shock was delivered
arrest was witnessed

Irreversible Death (**Code 900**) No resuscitative efforts required if:

Decapitation
Decomposition
Extrusion of brain matter
Pulseless and apneic with removal of the lower half of the body
Full thickness burns over 90% of total BSA & no obvious signs of life

Orange Form/Pre-Hospital Medical Care Directive (PHMCD)/DNR

No resuscitative efforts required if:
Patient is Pulseless and Apneic **and**,
Orange form or PHMCD/DNR appears valid **and**,
No on-scene request to resuscitate

A DNR does not apply to children and adults with disabilities in public or private schools. *Resuscitative efforts should be initiated.* (ARS 36-3251)

DNR** does not mean **Do Not Treat**
If Patient is not in cardiac arrest upon arrival of EMS, refer to the appropriate treatment AG. Palliative care is not withheld.

TERMINATION OF RESUSCITATION

DOA (Code 900)

After determining time of assessment, contact Fire Alarm for Law Enforcement follow-up

If no suspicions of foul play, body may be released to supervisory staff of Licensed Care Facility prior to Law Enforcement arrival. TFD will provide:

- Responding Unit # • TFD Officer Name • Time of Death
- Pronouncing Physician (TFD Medical Director or staff physician)

Field Termination Requirements

- Adult Patient
- Non-traumatic cardiac arrest
- Asystole or PEA upon **ALS** arrival
- Does not respond to full resuscitative efforts
  - 3 rounds of CCC
  - ACLS algorithm
  - Placement of advanced airway
  - IV/IO and medication administration
- 20 minutes of resuscitative efforts after the above conditions have been met
- No absolute or relative hypothermia
- No apparent toxic agent exposure
- $EtCO_2$ level at the time of termination is < 20mmHg

May transport the Patient meeting Field Termination Requirements criteria if:

- Family expectations and/or need of additional support resources
- Safety of crew and public if halted
- Language/cultural barriers

*** It is Law Enforcement's responsibility to notify Office of Medical Examiner, PCP or Physician of Record for Death Certificate.

DOCUMENTATION

Documentation will accurately reflect the initial contact, evaluation, care and outcome of each Patient*.

- **ALS** Patient records (ePCR) should be sent to the server prior to departure from the receiving facility.
- **BLS** Patient records should be completed by 1000 hrs of the next shift. No reports shall be left incomplete prior to the 6-day break.

Each ePCR shall include a 6-Item Cognitive Screen, pertinent physical, neurological, and/or historical findings.

Document time, Patient condition and personal property/medications upon transfer to transport unit, or emergency department.

Narrative shall include additional information not documented elsewhere within the ePCR i.e. pertinent negatives, response to treatment, change in patient condition, details of the scene. Interventions that are Patient billing items shall be documented properly in the intervention section of ePCR.

Refusal documentation should additionally include:

Ability to verbalize understanding of the risk(s) of refusing care/transport

Advised to re-contact 911 for further assistance

Advised to follow up with PCP or clinic of choice

Parental signature for pediatric Patients

Patient/Guardian or caregiver signature (delegated person willing to take responsibility of Patient)

Termination of Resuscitation should additionally include:

Time of assessment and termination of efforts

If Law Enforcement on scene, include name/payroll number.

If facility supervisory staff present, include name and title of individual

If no intervention per DNR

*Calls involving persons that do not meet the definition of a Patient shall be documented in FRMS.

TRANSPORT THRESHOLDS

2 sets of Vital Signs should be obtained.
Patient may be transported via **BLS** ambulance if they meet the following:

AIRWAY

Pulse Ox (SpO_2) >94% on room air or prescribed O_2 or at known baseline
Patent airway

BREATHING

Respiratory Rate appropriate for age and diagnosis:

Birth	- 1 week	30-50 breaths/min
1 week	- 6 years	25-30 breaths/min
6 years	- 13 years	20–25 breaths/min
> 14 years		12-20 breaths/min

Breath sounds clear and equal bilaterally; Work of breathing is normal

CIRCULATION

Heart Rate appropriate for age and diagnosis:
- Adult 60-130bpm - Child 60-160bpm

Radial pulses palpable and equal bilaterally
Blood Pressure appropriate for age and diagnosis:
- Adult 90-180 (Systolic) SBP; 60-110 Diastolic (DBP)
- Child 80-120 SBP; 50-70 DBP

Orthostatic Negative: After positional change lasting 2 min, Patient must:
- Be asymptomatic
- Have no decrease in SBP ≥ 20mmHg, and/or
- Have no increase in HR ≥ 20bpm

Caution if Patient is on beta-blockers

DISABILITY

GCS ≥ 13
CAOx4 or Responds to verbal stimuli and becomes CAOx4
Glucose Monitoring > 70mg/dL & < 500mg/dL asymptomatic adult
Glucose Monitoring > 40mg/dL & < 100mg/dL Neonate
6-Item Cognitive Screen (Score 5/6).
Stroke-like symptoms that are chronic or confirmed onset >24 hrs

ENVIRONMENT

Temperature range 97° to 102° and/or Skin, warm and dry

If the Patient does not meet the above **BLS** thresholds, consult the AG specific to the Patient condition.

BLS CARE

Initiate TFD Assessment, Care and Treatments

The following should be completed and documented as Patient condition requires for all Patients meeting **BLS** thresholds and per the appropriate AG:

Airway

Assess and maintain patent airway

Breathing

Position Patient to maximize ventilation/oxygenation

Oxygen to keep O_2 Saturation > 94%

Initiate O_2 via NC, simple mask, or NRB; BVM, OPA and/or NPA per Patient complaint or need:

- SPO_2 < 94% = NRB 12-15L/min
- SPO_2 > 94% = NC 2-4L/min

Initiate Rescue Airway for decreasing level of arousal

Circulation

Control bleeding, use direct pressure or tourniquets as indicated

VS x2 prior to transfer of care: HR, RR, BP

Repeat VS q 10 min. for stable & q 5 min. for unstable Patients

Disability

6-Item Cognitive Screen

Glucose monitoring and treatment as Patient condition requires

Environment

Temperature monitoring as Patient condition requires

- Position of comfort or as Patient condition requires
- Assist with department approved medical devices as soon as equipment and qualified personnel are available

ALS CARE

Initiate TFD Assessment, Care and Treatments

The following should be completed and documented as Patient condition requires for all Patients meeting **ALS** thresholds
Continue BLS Care and follow appropriate AG:

Airway
- Advanced airway adjuncts/facilitated ETT procedures for decreasing level of arousal
- Reassess ETT / Rescue Airway for placement after Patient transfer
- Cricothyrotomy if unable to secure airway with airway maneuvers, ETT or Rescue Airway

Breathing
- $EtCO_2$ monitoring for Patients receiving O_2, CPAP or intubated. Maintain range: 35-45mmHg unless otherwise directed in AGs
- CPAP: pressures not to exceed 10cm H_2O (12L/min O_2 flow)
- Needle Thoracostomy for S/Sx of tension pneumothorax

Circulation
- Evaluate 3-lead ECG findings and/or perform 12-lead
- If 12-lead performed, transmit to receiving facility for all Patients transported by TFD ambulance
- Establish vascular access as appropriate
- Infuse fluids at TKO unless specified by AG
- Large bore only in anticipation of Patient requiring high volume fluids or receiving blood products
- Immediate IO approved for cardiac arrest and critically unstable Patient
- IO access approved for Trauma and critically unstable medical Patient after 2 unsuccessful IV attempts

Pressure bag settings per age group
- ≤ 3 yrs. 100mmHg
- 4- 8 yrs. 200mmHg
- > 8 yrs. 300mmHg

*** Medical consult with University South Campus may be initiated for complex situations to assist in decision making or University Main for Pediatric EM Consult

BEHAVIORAL

BLS Transport

If Patient is cooperative, stable & needs/wants further evaluation
Verbalization only of suicidal/homicidal intent
If ingested substance is non-life threatening per AZ Poison Control

ALS Transport

All Patients receiving IV/IM/IN medications or fluids
All Patients with acute-onset changes in mental status, suspected or confirmed loss of consciousness or increased cognitive impairment
Suspected or symptomatic of:
Ingestions/overdoses, head injury, drug reaction, exposures attempted suicide or other medical or traumatic emergencies

Considerations:

Assess physical appearance, behavior, speech, mood, consciousness, orientation, judgment, insight
Assess for and determine possibility of underlying illness or injury
Initiate medical treatment per appropriate AG
Verify diagnosis, prior treatments and/or meds when possible

BLS - BEHAVIORAL TX

Initiate TFD Assessment, Care and Treatments

Restraints/Protection/Position

Maintain patent airway

Physically restrain Patient only if sufficient personnel available

Use authorized restraints; consider "spit sock"

Restrain all four extremities, control Patient's head

Supine position only, one arm above head and one arm to side to prevent Patient from rolling, twisting and or scooting down

Secure the Patient as appropriate with full chest anatomy available for compressions

Closely monitor respiratory status

Reassess/document neurovascular status of extremities x4 q 5 min

Finger width between restraint and Patient's skin.

Restraints are not to be removed with a knife

DO NOT release restraints until transfer of care

Treatment

Pepper Spray: Decon with H_2O, apply ice packs, discourage eye rubbing

Taser Probes: Ask Law Enforcement to remove; if imbedded in face, neck, eye or groin, transport to ED for removal

Law Enforcement Restraints: (excludes DOC) Officer to accompany, transport or assist with restraint application & ideally ride with or follow within sight of ambulance

Handcuffed: Transport personnel in ambulance must have handcuff key available

Use authorized restraints

Excited Delirium (Psychosis): Patients exhibiting combative or dangerous behavior that places responding crew at risk during transport

Request Tucson Police Department (TPD)

Full restraints post medication administration

- 4 Point restraints, supine position
- Protect/monitor airway as indicated
- Transport to closest appropriate facility

Midazolam (Versed):

Adult Size (> 60kg) 10mg IM, repeat x1 q 5 minutes if combative behavior continues; max dose 20mg.

Pediatric Size (30-60kg) 5mg IM, do NOT repeat dose

OR

Midazolam (Versed): Intra-Nasal if restrained

Adult Size (> 60kg) 1 mL (5mg)/nare for a total of 10mg; repeat x1 q 5 minutes if combative behavior continues; max dose 20mg

Pediatric Size (30-60kg) 1mL (5mg)/nare for a total of 10mg; do NOT repeat dose

CARDIOVASCULAR / CARDIAC ARREST

BLS Transport

ONLY for non-cardiac chest pain complaint; reproducible and NO cardiovascular history or findings.

ALS Transport

All cardiovascular Patients receiving IV fluids and medications
Symptomatic hypotension, hypertension
Cardiac related chest pain
New onset or worsening cardiac symptoms and/or ECG changes
Indicated capnograph waveforms and/or numeric value
Decreased peripheral perfusion or syncope with (+) orthostatics: HR increase of 20 bpm and SBP decrease of 20 mmHg after positional change of 2 minutes

Considerations:

Assess for hypothermia secondary to submersion, drug OD, exposure, electrocution or any other reversible condition
Assess central perfusion and palpate peripheral pulses x4
Control bleeding

ACLS

Follow applicable AG for proper treatment and medication dose requirements

BLS - CARDIOVASCULAR TX

Initiate TFD Assessment, Care and Treatments

Hypotension: (SBP < 90mmHg)

Shock position - feet elevated 15°
Assess peripheral pulses x4
Control bleeding

Hypertension: (SBP ≥ 180mmHg or DBP ≥ 110mmHg)

Assess bilateral blood pressures

Chest Pain/Angina: (probable cardiac origin)

Assess for and document numeric pain scale 0-10
Administer O_2
Assist with Patient's **Aspirin:** 324mg PO
Assist with Patient's **Nitroglycerin:** 0.4mg/tablet
If initial SBP > 110mmHg, assist with 1 NTG 0.4mg, SL q 5 minutes x3 or until pain improves; reassess BP after each dose

- Hold NTG if SBP drops below 90mmHg; place Patient in shock position
- Once SBP increases ≥ 110mmHg continue with NTG therapy

Determine if Patient has a cardiac device (LVAD, Pacemaker, etc) and ensure information and equipment are transported with Patient

Transfer to **ALS** for assessment and **ALS** interventions

- Required for all cardiac related chest pain, symptomatic hypotension/hypertension, decreased peripheral perfusion or syncopal event

ALS - CARDIOVASCULAR TX

Initiate TFD Assessment, Care and Treatments

Hypotension: (SBP ≤ 90 mmHg)

IV NS 20mL/kg Bolus or 10mL/kg for neonate if lungs clear
Reassess & repeat bolus PRN until SBP appropriate for age

Persistent Hypotension: (SBP ≤ 80mmHg) & unresponsive to bolus

Dopamine: via micro-drip tubing; titrate to achieve 80mmHg
400mg per 250mL NS or LR = 1600mcg per mL
Adult Size (> 60kg) 15mcg/kg/min
Pediatric Size (≤ 60kg) 10mcg/kg/min initial rate

Infusion of **Dopamine** for Patients with CHF and HR > 100 may decrease cardiac output, monitor Patient for changes

Hypertension: SBP ≥ 210mmHg or DBP ≥ 110mmHg or S/Sx of cardiovascular/renal insufficiency or neurological impairment:
Morphine: All Patients 2mg q 5 minutes IV titrate to effect; max dose 10mg

Chest Pain

Aspirin: 324mg PO
Establish vascular access
Nitroglycerin: If SBP ≥ 110mmHg give 1 NTG 0.4mg, SL q 5 minutes x3 or until pain improves; re-assess BP after each dose
Hold NTG if SBP drops below 90mmHg; place Patient in shock position and administer 20mL/kg fluid bolus
Once SBP ≥ 110mmHg, continue with NTG therapy
If pain continues after 3 NTG or if Patient unable to take NTG,
Morphine: All Patients 5mg q 5 minutes IV titrate to effect; max dose 20mg

Ondansetron (Zofran): For nausea or vomiting

Adult Size (> 30kg) 4mg IV over 2-5 minutes; if no response after 15 minutes, may repeat x1
Pediatric Size (≤ 30kg) 0.15mg/kg IV, do NOT repeat dose.

ALS - TACHYCARDIA TX

Initiate TFD Assessment, Care and Treatments

Unstable - HR ≥ 150+, Ischemic Chest Pain, Dyspnea, ↓ Level of Arousal, ↓ BP, Shock, Heart Failure

Narrow QRS - Regular

Stable

Vagal maneuvers

Adenosine: 6mg rapid IVP with 10mL NS flush

If no conversion in 1-2 minutes, administer 2nd dose

2nd dose **Adenosine:** 12mg rapid IVP with 10mL NS flush

If no conversion, go to Calcium Channel Blocker (see below)

Unstable

Synchronized Cardioversion at 50J - 100J

If Cardioversion is unsuccessful consider pharmacology

Narrow QRS - Irregular

Stable

Calcium Channel Blocker

Verapamil: 2.5–5mg IV/IO slow push over 2 minutes

2nd dose **Verapamil:** 5-10mg slow push; max dose 30mg.

Unstable

Synchronized Cardioversion at 120J - 200J – Biphasic

If Cardioversion is unsuccessful consider pharmacology

Wide QRS

Stable

Amiodarone: 150mg in 50mL D5W, administer slowly over 10 minutes

Unstable

Synchronized Cardioversion at 100J

If Cardioversion is unsuccessful consider pharmacology

ALS - BRADYCARDIA TX

Initiate TFD Assessment, Care and Treatments

Stable - HR < 50bpm, Maintain airway, O_2 via NC, observe

Unstable - HR < 50bpm, with serious S/Sx: Shock, Hypotension, Altered Mental Status, Ischemic Chest Pain, Acute Heart Failure

Atropine: 0.5mg IV q 3-5 minutes; max dose 3mg

* Atropine may not work for transplanted hearts, Mobitz (Type II), AV Block or 3rd ° AV Block with IVR

Transcutaneous Pacing - Verify capture and perfusion

Midazolam (Versed): as needed for sedation all Patients

2mg IV/IM/IO may repeat dose as needed; max dose 5mg

Morphine: for refractory pain all Patients

2mg q 5 minutes IV/IO/IM; max dose 10mg

Monitor for hypotension and decreased respiratory status

Treat Possible Causes: 5H's & 5T's

- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypothermia
- Hypovolemia
- Hyperkalemia
- Pulmonary Thrombosis
- Cardiac Tamponade
- Coronary Thrombosis
- Tension Pneumothorax
- Toxins

ALS - PEDIATRIC DYSRHYTHMIAS TX

Initiate TFD Assessment, Care and Treatments

Consider airway obstruction/respiratory compromise and previous medical history

Treat Possible Causes: 5H's & 5T's

- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypothermia
- Hypovolemia
- Hyperkalemia
- Pulmonary Thrombosis
- Cardiac Tamponade
- Coronary Thrombosis
- Tension Pneumothorax
- Toxins

Bradycardia with Pulse (Symptomatic)

Begin compressions on HR < 60bpm

Epinephrine:

0.01mg/kg IV/IO (1:10,000: 0.1mL/kg), repeat q 3 minutes, max dose 1mg

Supraventricular Tachycardia (SVT) - Vagal maneuvers if stable

Infants ≤ 1 year or ≤ 10 kg (22lbs) with persistent HR > 220bpm

Children 1 to 8 years old or 10-25kg (22-55lbs) with persistent HR > 180bpm

Adenosine: 0.1mg/kg IV/IO (max dose 6mg)

2nd dose **Adenosine:** 0.2mg/kg (max dose 12mg)

1kg = 2.2lbs

BLS - CARDIAC ARREST TX

Initiate TFD Assessment, Care and Treatments

IF cardiac arrest results from asphyxia, drowning or trauma, or the Patient is pediatric size (≤ 60kg), follow AHA guidelines

AHA CPR Guidelines

Compressions - 100/minute
- Adult and Child = 2" depth
- Infant = 1-1/2" depth

Airway - Head Tilt/ Chin Lift
- Assess airway for Foreign Body Airway Obstruction
- Initiate OPA & NRB or Smart Bag at 12-15L/min

Breathing -
- Adult and Child = 30 compressions/2 ventilations
- Infant = 15 compressions/2 ventilations

IF cardiac arrest results from any other cause, follow CCC Guidelines.

Continuous Cardiac Compressions (CCC)

100 - 116 compressions/minute

200 Compressions = 1 round

Rescue Airway - after 3 rounds of compressions, insert with no interruptions in compressions

IF arrest is witnessed by TFD, may interrupt compressions to defibrillate immediately with AED

ALS - CARDIAC ARREST TX

Initiate TFD Assessment, Care and Treatments

Medical Code Adult

Assess 3-lead rhythm
Establish vascular access
ETT or Rescue Airway after 3 rounds of compressions, insert with no interruption to compressions
Monitor $EtCO_2$ (if $EtCO_2 \leq 10$ improve compressions)

V-fib/Pulseless V-Tach: Shockable Rhythms

Defibrillate 200 joules biphasic after→ 1 round CPR
Epinephrine: 1mg (1:10,000) IV/IO, repeat q 3 minutes
If no conversion:
Amiodarone: 300mg IV/IO, repeat dose after 10 minutes
2nd dose **Amiodarone:** 150mg IV/IO

If **Torsade's de Pointes** administer **Magnesium Sulfate:**
With a pulse: Dilute 2 grams in 100mL NS. Administer over 5 minutes.
Without a pulse: 2 grams in 10mL NS rapid IVP
Continue CPR/Medications/Defibrillation until conversion to a perfusing rhythm

Asystole/PEA: Non-Shockable Rhythms

Epinephrine: 1mg (1:10,000) IV/IO repeat q 3 minutes
Continue CPR; repeat Epi, reassess q 3 minutes
Continue CPR/Epi until conversion to perfusing rhythm
IF Asystole/PEA remains unchanged after 20 minutes (3 rounds of CPR/EPI/assessment followed by ACLS guidelines) then;
Assess **for reversible causes** and treatment
Consider Field Termination.

Return of Spontaneous Circulation

ROSC > 30 seconds administer: 1-2L IV fluid bolus NS
Keep BP > 90mmHg - $EtCO_2$ 35-40 mmHg - Ventilate 8-10 breaths/min
Dopamine: for persistent refractory fluid hypotension - initial dose 15mcg/kg/min

ALS - PEDIATRIC ARREST TX

Initiate TFD Assessment, Care and Treatments

Reference Braslow Tape for proper drug dose and procedures

Pediatric Cardiac Algorithms follow PEPP/PALS

Assess 3-lead rhythm
Establish IO access
Fluid Resuscitation: 20mL/kg and < 30 days 10mL/kg
Taller than 4 feet consider approved Rescue Airway
Monitor $EtCO_2$ (if $EtCO_2 \leq 15$ improve compressions)

V-Fib / Pulseless V-Tach: Shockable Rhythm

Defibrillation: 1st shock - 2 J/kg; 2nd shock - 4 J/kg (via known Braslow weight based assessment)

Epinephrine: 0.01mg/kg IV/IO (1:10,000: 0.1 mL/kg) repeat q 3-5 minutes

OR

Epinephrine: 0.1mg/kg ET Tube (1:1000: 0.1 mL/kg); flush 2-3mL NS repeat q 3 minutes

Amiodarone: 5mg/kg q 5 minutes via IV/IO may repeat dose x2 q 10 minutes

If **Torsade's de Pointes** administer **Magnesium Sulfate:**

With a pulse: 25-50mg/kg IV / IO administered over 10-20 minutes; max dose 2 grams

Without a pulse: 25-50mg/kg IV / IO; rapid IVP max dose 2 grams

Asystole/PEA: Non-Shockable Rhythms

Epinephrine: 0.01mg/kg IV/IO (1:10,000: 0.1mL/kg);repeat q 3-5 minutes
Continue CPR; repeat Epi, reassess q 3-5 minutes
Continue CPR/Epi until conversion to perfusing rhythm
IF Asystole/PEA remains unchanged after 20 minutes (3 rounds of CPR/EPI/assessment) then;
Assess **for reversible causes** and treatment

Return of Spontaneous Circulation

ROSC > 30 seconds administer 20mL/kg IV fluid bolus NS or 10mL/kg for Neonate if lungs clear, reassess and repeat bolus PRN until SBP is appropriate for age.
Maintain radial pulse - $EtCO_2$ 35-40 mmHg - Ventilate 8-10 breaths/min

Dopamine: for persistent refractory fluid hypotension - initial dose 10mcg/kg/min

DIABETIC / SEPSIS / SICK

BLS Transport

BLS may be considered if the Patient has a known diabetic Hx and has received EMS treatment and has returned to known glucose and cognitive baselines and is stable and wants further evaluation at ED.

IF Patient requests transport for evaluation after **ALS** treatment and meets **BLS** Thresholds, **ALS** may choose to disconnect IV or place a saline lock & transfer to **BLS**.

ALS Transport

Patient not returning to cognitive baseline

If Glucagon administered

Suspected insulin overdose

Glucose ≥ 500mg/dL and/or Symptomatic

Suspected or diagnosed electrolyte imbalance

Combined hypotension and increased temperature or meets criteria for SEPSIS alert:

- HR > 90bpm
- SBP ≤ 90mmHg
- RR > 20 breaths/min
- Temp > 102° F
- $EtCO_2$ < 32mmHg

Abnormal capnography

≤1 year old with symptoms of an acute (<72 hours) illness

Treat and Release

May be considered if Patient is within **BLS** Thresholds. Prefer that Patient is with a responsible adult to assure caloric intake.

BLS - DIABETIC / SEPSIS / SICK TX

Initiate TFD Assessment, Care and Treatments

Diabetic/Glucose

Hypoglycemia - Adult or child, symptomatic able to follow commands, gag reflex intact with glucose level ≤ 70mg/dL

- Oral Glucose 1 - 2 tubes

Neonates, if arousable with glucose ≤ 40mg/dL, suggest oral feeding prior to or during and transport – Request **ALS**

Hyperglycemia: Glucose > 500mg/dL and/or Symptomatic
Request **ALS** for capnography, IV/IO NS fluid administration and/or fluid bolus

Infection

- FSBG > 120mg/dL without diabetic history
- New onset altered mental status
- Absent bowel sounds; recent onset /worsening jaundice
- Known infection
- Recent surgical procedure or injury

Sepsis

eTelemetry/MEDS relay SEPSIS alert for any two:

- Temp > 102° F or < 96.8° F
- HR > 90bpm
- RR > 20 breaths/min. or $EtCO_2$ < 30mmHg
- SBP < 90mmHg, or hypotension
- SPO_2 < 90% or < 94% with supplement O_2

ALS - DIABETIC / SEPSIS / SICK TX

Initiate TFD Assessment, Care and Treatments

Diabetic/Glucose

Hypoglycemia – symptomatic after oral glucose, FSBS < 70mg/dL
Establish vascular access and assess patency before IV glucose
Adult Patient returning to cognitive baseline with **BLS** thresholds, post administration of IV Dextrose 50% (D50) may allow **Treat and Release** or **BLS** transfer with saline lock to receiving facility

Dextrose:

Adult Size (> 60kg) Establish IV NS TKO Administer Dextrose 50% (D50) 25 grams IVP (saline lock not acceptable for administration)
Pediatric Size (≤ 60kg) 2mL/kg Dextrose 25% (D25) 1:1 dilution D50
Infant Size (< 10kg) 5mL/kg Dextrose 10% (D10) 4:1 dilution D50
Neonate (≤ 1 month) 2mL/kg Dextrose 10% (D10) 4:1 dilution D50

- Flush IV with 10mL NS after D50, D25 or D10 infusion
- If unable to initiate IV, administer **Glucagon**

Glucagon:

Adult Size (> 60kg) 1mg IM, may repeat in 7-10 minutes
Pediatric Size (≤ 60kg) 0.5mg IM, may repeat in 7-10 minutes

Hyperglycemia - Glucose > 500mg/dL and/or Symptomatic
Establish vascular access, NS 20mL/kg bolus; reassess; may repeat x1

Infection/Sepsis

Establish vascular access NS/LR
Adult Size (> 60kg) If SBP < 90mmHg administer 20mL/kg bolus NS; reassess until SBP > 90mmHg; reassess breath sounds
Pediatric Size (< 60kg) administer 10mL/kg bolus NS; reassess breath sounds; repeat until SBP≥ (70mmHg +(agex2)); max dose 1L

Electrolyte Imbalance

Perform 3 or 12-lead EKG → Evaluate & document rhythm
Adult Size (> 60kg) If SBP < 90mmHg administer 20mL/kg bolus NS; repeat until SBP ≥90mmHg; reassess breath sounds
Pediatric Size (≤ 60kg) administer 10mL/kg bolus NS; reassess breath sounds; repeat until SBP≥ (70mmHg +(agex2)); max dose 1L

ENVIRONMENTAL / OD

BLS Transport

Probability for OD, ingestion or poisoning which is non-emergent/not life-threatening

All non-venomous snake bites

Non-systemic/Asymptomatic insect stings

Mild Hypothermia or Hyperthermia

ALS Transport

All unconscious/unresponsive or responding only to painful stimuli

Requiring active re-warming or cooling

All highly suspected or emergent/life threatening OD, ingestion or poisoning; accidental or intentional. For EtOH, see **TRANSPORT OF AN IMPAIRED PERSON** AG

All venomous snake bites

Venomous insect stings exhibiting systemic reaction

Symptomatic hypo/hyperthermic (< 97 ºF or > 102 ºF)

Considerations:

Poison Control Center does not provide Medical Direction. Medical consult with Poison Control Center may be initiated for complex situations to assist with decision-making.

**** TPD notification should be made on all suspected OD that are intentional and/or involve illegal/illicit substances and/or Patient < 18 years old.*

BLS - ENVIRONMENTAL / OD TX

Initiate TFD Assessment, Care and Treatments

Unconscious/Unresponsive

Perform sternal rub or painful stimuli, note response
Evaluate oxygen saturation
Treat symptomatic glucose levels < 70mg/dL per **DIABETIC / SEPSIS / SICK** AG

Ingestions/Poisonings/OD

Assess for/document type of alcohol/drugs/exposures
May consult Poison Control Center (**626-6016**) for more information

Hyperthermia: > 102° F (38.9° C)

Move Patient to cool area/shade
Begin cooling measures, minimize shivering
Oral re-hydration (slow, measured and documented amounts)
Reassess temperature q 5-10 minutes as resources allow
No changes in Patient status within 20 minutes or N/V request **ALS**
Severe > 104° F (40° C) Heat Stroke; treat as above & utilize approved cooling method - Request **ALS**

Hypothermia

Mild - Passive external re-warming, warm blankets
Moderate < 97°F or (36.1°C) - Active external re-warming, begin approved warming method; request **ALS**

Envenomation/Snakebite

NO constricting bands, ice or suction to the bite
Remove prosthetics on affected extremity
Remove/secure jewelry from all extremities and document
Immobilize extremity at or below the heart
Mark the proximal edge of any discoloration or swelling and write time of each assessment, track progressive swelling

ALS - ENVIRONMENTAL / OD TX

Initiate TFD Assessment, Care and Treatments

Unconscious/Unresponsive

Naloxone (Narcan):

Adult Size (> 60kg) 1-2mg/nare for total of 4mg, may repeat q 2 minutes; max dose 10mg **OR**

- 0.4mg - 1.0mg slow IVP or IM; Titrate to effect; may repeat q 2 minutes; max dose 10mg

Pediatric Size (≤ 60kg) 0.2mg - 0.5mg/nare for a total of 1mg; may repeat q 2 minutes; max dose 5mg **OR**

- 0.4mg - 1.0mg slow IVP or IM; titrate to effect; may repeat q 2 minutes; max dose 5mg

Hypoglycemia See **DIABETIC / SEPSIS / SICK** AG

Suspected EtOH toxicity after required glucose correction

Thiamine:

100mg IVP (NO Thiamine for Child ≤ 8yrs.)

Hyperthermia: > 102° F or (40°C)

Adult Size (> 60kg) Administer 2 liters IV NS ASAP; max 2L
Pediatric Size (≤ 60kg) 20mL/kg; may repeat x1; max 1L

Hyperthermic Seizures Follow **NEURO / STROKE / SEIZURE** AG

Hypothermia

Moderate < 97° F (36.1°C) Active external re-warming; consider warm IV NS/LR
Severe < 95° F (35°C) Initiate ACLS as needed; Limit to one shock for VF/VT, withhold IV meds until Temp is > 86° F (30°C)

Envenomation/Snakebite

Administer 20mL/kg IV NS/LR in unaffected extremity
Follow Poison Control guidance

GI / GU / GYN

BLS Transport

BLS may be considered if Patient has a known **GI / GU / GYN** Hx & meets **BLS** thresholds

Women of child-bearing age with abdominal pain or vaginal bleeding of unknown etiology, follow **OB / NEONATAL** AG

ALS Transport

New onset or worsening abdominal pain

Associated symptoms such as

- fever
- shock/symptomatic hypotension
- hemorrhage > 250mL
- dehydration

Considerations:

Nausea

Vomiting

Anorexia

Hematuria or Melena

BLS - GI / GU / GYN TX

Initiate TFD Assessment, Care and Treatments

Assess abdomen for redness, swelling, ascites, pain, rigidity, re-bound or point-specific tenderness

Assess for presence of chest, abdominal, or pelvic pain and all underlying cardiac conditions

Assess pain: Scale (0-10), Nature (intermittent, progressing, steady, generalized, localized, dull, sharp, referred, cramping, chronic, acute)

Assess for use of anti-coagulants

Note color, amount, and consistency of emesis

Determine recent foreign travel or exposures prior to onset of symptoms

If sexual assault, protect possible evidence & notify TPD
- Pediatric ≤ 14 sexual assault transport to TMC as first option

Place any products of conception into a container and transport with the Patient

If evidence of dehydration or hypoperfusion administer 20mL/kg bolus NS; max 500mL per bolus; reassess pulmonary and hemodynamic status after each bolus; repeat as needed; 2L max

Suspected Kidney Stones

Pain Scale 5-10/10, utilize pain management

Morphine:

Adult Size (> 60kg) 5mg q 5 minutes IV titrate to effect; max dose 20mg

Pediatric Size (≤ 60kg) 0.1 mg/kg in increments of 1-2mg q 10 minutes IV titrate to effect; max dose 10mg

Nausea/Vomiting

N/V associated with flu-like symptoms, hormone changes or administration of **Morphine**

Ondansetron (Zofran): Not effective for motion sickness

Adult Size (> 30kg) 4mg IV over 2-5 minutes; if no response after 15 minutes, may repeat x1

Pediatric Size (≤ 30kg) 0.15mg/kg IV over 2-5 minutes; do NOT repeat dose

NEURO / STROKE / SEIZURE

BLS Transport

Neuro S/Sx onset ≥ 24 hours and meets **BLS** Assessment Thresholds
SINGLE Febrile Seizure in a child between 2 months and 7 years who has returned to baseline mental status, Temp ≤ 102° F, hemodynamically & neurologically stable

ALS Transport

If stroke or stroke-like S/Sx with onset < 24 hours, duration/onset unknown or transient, regardless of age
New onset seizure, active seizure or status epilepticus
If > 20 minute delay in return to cognitive baseline
Only responsive to painful stimuli
Neuro S/Sx with onset < 24 hours, unexplained or an acute change in mental status, loss of consciousness or atypical mentation
Neurologic Patients that receive **ALS** administered IV fluids or meds

Treat and Release

A post seizure Patient may remain at home if:
- has a known seizure history
- has returned to baseline
- no evidence of traumatic injury
- is not cognitively impaired
- is not requesting ambulance transport

*** *Request that responsible adult is present to ensure safety & continued observation.*

BLS - NEURO / STROKE / SEIZURE TX

Initiate TFD Assessment, Care and Treatments

Suspected Stroke / CVA / TIA

Assess for hypertension, confusion and/or severe atypical headache
Document onset time
Perform Stroke Assessment:

- Smile: Facial grimace/asymmetry?
- Stick out tongue: Asymmetrical?
- Talk: Speech unclear, incoherent?
- Extend & Raise Arms: Arm Drift?

Seizures (SZ)

Assess for differential causes: electrolyte imbalance, infection, Hx of tumors, exposures, newly prescribed antipsychotics, antiemetics or antidepressants causing a dystonic reaction, etc
Document history, frequency & type of seizures

Generalized Seizures

Absence SZ: brief loss of awareness, staring
Tonic-Clonic SZ: rapid loss of consciousness with rhythmic muscle stiffening and/or contraction
Status SZ: >10min or multiple seizures without regaining consciousness between SZ

Partial Seizures

Simple SZ: Single motor, sensory or autonomic origin; (-) loss of consciousness
Complex SZ: Episodic changes in behavior; (+) alt. LOC; (+) aura; may be able to perform complex tasks without recall

IF S/Sx of ICP or Herniation

Pupils: unilateral or bilateral dilation, asymmetric reactivity; &/or non-purposeful posturing

Monitor FSBG and/or temperature

ALS - NEURO / STROKE / SEIZURE TX

Initiate TFD Assessment, Care and Treatments

Suspected Stroke / CVA / TIA

Perform 12-lead EKG
Assess for progression/worsening of symptoms
eTelemetry Stroke Alert

Seizures (Active Seizure on Arrival)

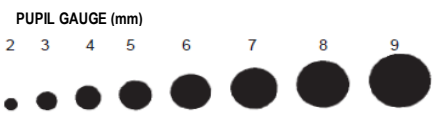
Midazolam (Versed):
Adult Size (≥ 40kg) administer 10mg IM/IN or 5mg IV/IO; Max volume 1 ml per nare; may repeat in 10 minutes; max of (2) doses
Pediatric Size (13-40kg) administer 5mg IM/IN or 2.5mg IV/IO; Max volume 1 ml per nare; may repeat in 10 minutes; max of (2) doses
Infant Size (≤ 12kg) administer 0.2mg/kg IM/IN or 0.1mg/kg IV/IO; Max volume 1 ml per nare; may repeat initial in10 minutes; max of (2) doses

Dystonic Reaction

Diphenhydramine (Benadryl):
Adult Size (> 60kg) 50mg IV/IM
Pediatric Size (≤ 60kg) 25mg IV/IM

Suspected TBI

Elevate head of gurney 30°
Continue to monitor FSBG; maintain > 70mg/dL
Strict avoidance and immediate correction of hyperventilation via $EtCO_2$ monitoring
• Adults and Pediatric: Maintain $EtCO_2$ 35 - 45mmHg
administer 20mL/kg NS IV/IO bolus until SBP:
• 10 years - Adult: > 90mmHg
• < 10 years age: BP Formula 70mmHg + (age x2)



BLS Transport

Not-in-labor and Patient wants further evaluation

ALS Transport

All labor
Pregnancy with ↓ fetal movement, bleeding or imminent delivery
Rupture of Membranes > 24 hours (Fluid: bloody, green, foul smelling; any ↑ in temperature)
Active vaginal bleeding (bright red blood)
Altered mental status and/or recent seizure
Hypotension, signs of shock
Hypertension, upper limit of 140/90
Increased reflex sensitivity to light or noise
New onset or worsening respiratory distress
Patient at any gestational age that meets SAEMS Trauma Triage Criteria (including mechanism only)

- Notify ED if Patient is unstable or imminent delivery or high risk complications

- Imminent delivery may be managed on scene if no noted complications.

O_2 via NC
Place in position of comfort or left lateral recumbent, NOT supine
Shock position for increased bleeding or decreased BP
If hypertensive, minimize external stimuli

Labor

Maintain Patient in reclining or lateral position
If in labor, assess contractions, and crowning;
Assess for presence of fluid, bleeding, bulging membranes, presenting part of cord
Labor support: coach to maximize breathing & control pushing until crowning; rest between contractions
Prepare clean area for delivery, prepare equipment and supplies needed for delivery and newborn resuscitation

Delivery

Suction Infant mouth and nose before delivery of thorax; clamp cord x2, cut between clamps; stimulate, dry, warm and support newborn; place to mother's breast

Assess amount / color / consistency of vaginal discharge

Monitor delivery of placenta, massage fundus to decrease bleeding

Cord presentation: assess pulsations; DO NOT pull on cord; position mother to remove weight of fetus off of cord, elevate fetal head off of cord, remain positioned until arrival &transfer of care at L&D

Limb presentation: DO NOT pull or push; encourage breathing to slow labor, position mother to remove weight of fetus off of presenting part

Neonatal Support

Keep Warm, ➔Dry, ➔Stimulate,➔ APGAR
(Re-assess and cycle intervention as necessary)
Airway Support: Assess and escalate care as needed:
Suction ➔ Blow-by O_2 ➔ Positive Pressure Ventilation (gently bagging to avoid barotrauma) APGAR at 1 minute and 5 minutes, keep infant warm, dry, cover head, keep face/mucous membranes visible to assess perfusion, O_2 PRN; VS: Temperature; Glucose monitoring

ALS - OB / NEONATAL TX

Initiate TFD Assessment, Care and Treatments

Initiate large bore IV NS/LR TKO
LR for Patients with ↓ FSBG; all other conditions NS

Treatments

Ondansetron (Zofran): Uncontrolled nausea/vomiting
Adult Size (> 30kg) 4mg IV over 2-5 minutes, repeat x1 after 15 minutes if no response

Labor

Pre-term Labor (≤ 37 weeks):
NS Bolus 500mL, re-bolus if labor persists and lung sounds clear

Continued Labor 15 minutes after bolus:
Magnesium Sulfate:
4 grams in 50mL NS (total concentration 80mg/mL) slow IV infusion over 30 minutes; infuse with micro-drip tubing set; monitor for hypotension or bradycardia

Eclampsia/Pregancy-induced seizures:
Magnesium Sulfate:
4 grams in 50mL NS (total concentration 80mg/mL) slow IV infusion over 30 minutes; infuse with micro-drip tubing set; monitor for hypotension or bradycardia

Seizure Hx or seizure not resolved by Magnesium Sulfate:
Midazolam (Versed):
Adult Size (≥ 40 kg) administer 10mg IM/IN or 5mg IV/IO; Max volume 1 ml per nare; may repeat in 10 minutes; max (2) doses
Pediatric Size (13-40 kg) administer 5mg IM/IN or 2.5mg IV/IO; Max volume 1 ml per nare; may repeat in 10 minutes; max (2) doses

Delivery

Mal presentations - protect cord and coach to slow down labor

Post Delivery of Fetus and Placenta

Fundal massage if vaginal bleeding
Post-partum Hemorrhage - 1000mL LR, wide-open

Neonatal Resuscitation

Warm, ➔Dry, ➔Stimulate,➔ APGAR,
Airway Support: Assess and escalate care as needed:
Suction ➔ Blow-by O2 ➔ Positive Pressure Ventilation (gently bagging to avoid barotrauma) ➔ Epinephrine (1:10,000) 0.01- 0.03mg/kg IM

RESPIRATORY

BLS Transport

IF Patient was treated 1 time with EMS assisted inhaler or SVN, and is now S/Sx free & wants further evaluation

ALS Transport

New onset or worsening respiratory distress, suspected FBAO or anaphylaxis

All Patients receiving EMS administered IV/IM meds and/or symptomatic after inhaler/SVN and/or with abnormal $EtCO_2$ capnograph and numeric values

Treat and Release

A Patient who denies respiratory distress post treatment, is not cognitively impaired, has decreased work of breathing, has returned to baseline and is refusing ambulance transport. Request that a responsible adult is present for continued observation.

BLS - RESPIRATORY TX

Initiate TFD Assessment, Care and Treatments

Obstructive Disease: COPD / Emphysema / Asthma

Monitor for changes in work of breathing
Initiate suction as needed
Administer SVN

Albuterol:

Adult and Pediatric Size - 2.5mg in 3mL NS; If S/Sx persist, repeat dose x1 and request **ALS**

Anaphylaxis/Allergic Reaction

Request **ALS**
Assist with Patient's **Epi-pen** auto-injector x1, inhaler or SVN

Albuterol:

Adult and Pediatric Size - 2.5mg in 3mL NS; If S/Sx persist, repeat dose x1

*** *Administer with caution to Patients with Cardiac Hx and existing tachycardia*

Apneic Patient

Visualize oropharynx for foreign body obstruction
Insert Rescue Airway

Rescue airway size determined by height

4 ft - 5 ft	**Size 3**	
5 ft - 6 ft	**Size 4**	
> 6 ft	**Size 5**	

ALS - RESPIRATORY TX 1

Initiate TFD Assessment, Care and Treatments

Obstructive Disease: COPD/Emphysema/Asthma/Croup

Albuterol/Atrovent:

Adult and Pediatric Size - **Albuterol** 2.5mg and **Atrovent** 0.5mg in 3mL NS; If S/Sx persist, **Albuterol Only** 2.5mg in 3mL NS; monitor for tachycardia and hypertension

If no improvement or worsening condition:

Solumedrol:

Adult and Pediatric Size - 2mg/kg IV/IM/IO; max dose 125mg

Magnesium Sulfate:

Adult Size (> 40kg) Infuse 2 grams/50mL NS IV/IO over 15 minutes
Pediatric Size (≥ 20-40kg) Infuse 1g/50mL NS IV/IO over 15 minutes
Infant Size (< 20kg) Infuse 50mg/kg in 50mL NS IV/IO over 15 minutes
Stop infusion for hypotension or bradycardia

Epinephrine 1:1000:

Caution in Patients > 50 years and/or with cardiac Hx:
Adult Size (> 60kg) 0.3mg/dose IM; may repeat x3 q 20 minutes
Pediatric Size (≤ 60kg) 0.15mg/dose IM; may repeat x3 q 20 minutes
Croup 3mg 1:1000 mixed in 3mL NS via SVN

Congestive Disease: Acute Pulmonary Edema/CHF/ Pneumonia

CPAP ≥ 8 years - monitor for hypotension

Midazolam (Versed):

Adult and Pediatric Size - 1-2mg IVP for increased anxiety

Hypertension SBP > 210mmHg or DBP > 110mmHg
- Refer to **CARDIOVASCULAR** AG

Hypotension/Persistent Hypotension SBP < 90mmHg
- Refer to **CARDIOVASCULAR** AG

ALS - RESPIRATORY TX 2

Initiate TFD Assessment, Care and Treatments

Anaphylaxis/Allergic Reaction

Patient's prescribed **Epi-pen** auto-injector x1, **BLS** assist or **ALS** administered

If no improvement or worsening condition:

Epinephrine 1:1000:

Caution in Patients > 50 years and/or with cardiac Hx:

Adult Size (> 60kg) 0.3mg/dose IM; may repeat x3 q 5 min

Pediatric Size (≤ 60kg) 0.15mg/dose IM; may repeat x3 q 5 min

Diphenhydramine (Benadryl):

Adult and Pediatric Size - 1mg/kg IV/IM/IO; max dose 50mg

Continued Respiratory Distress

Albuterol/Atrovent:

Adult and Pediatric Size - **Albuterol** 2.5mg and **Atrovent** 0.5mg in 3mL NS; If S/Sx persist, **Albuterol Only** 2.5mg in 3mL NS; monitor for tachycardia and hypertension

If no improvement or worsening condition:

Solumedrol:

Adult and Pediatric Size - 2mg/kg IV/IM/IO; max dose 125mg

Unstable Anaphylaxis

If RR < 8, SPO_2 < 80% on O_2 or ↓ LOC: may consider facilitated intubation:

Midazolam (Versed):

Adult Size (> 60kg) 20mg IV/IM/IO

Pediatric Size (≤ 60kg) 10mg IV/IM/IO

If unsuccessful consider Cricothyrotomy

Analgesia: for refractory pain; all Patients

Morphine: 2-10mg IVP

TRAUMA / BURN

BLS Transport

Any Patient who meets **BLS** transport thresholds and wants further medical evaluation.

ALS Transport

Any Patient who meets Physiologic or Anatomic Trauma Triage criteria

Less severe burns in Patients with pre-existing medical conditions

Any Patient who has received **ALS** administered fluids and/or medications

Any Patient with a suspected Pelvis/Hip fracture

≤ 1 month old with any symptoms of an acute injury

Pain level > 8 for Patients not meeting Physiologic or Anatomic criteria with;

- traumatic back pain < 72 hours onset
- suspected fracture or dislocation
- finger/toe amputation
- minor burns < 10% TBSA, (2nd or 3rd degree burn)

Treat and Release

Any Patient who meets **BLS** thresholds, is not cognitively impaired and is able to care for themselves as needed.

Considerations:

Refer to Trauma Triage criteria
Refer to Rule of Nines reference

TRAUMA TRIAGE CRITERIA

(If incident occurred within the last 24 hours)
Contact Trauma Center (if MCI, Incident Commander discretion) if Patient exhibits any one of the following:

Physiologic Trauma
GSC < 14 OR
SBP < 100mmHg OR
Neurologic deficit or paralysis

Sustained RR: breaths/minute
Adult (>8 yrs) < 10 or > 29
Child (1-8 yrs) > 40
Infant (<1yr) < 20

Anatomic Trauma
- Amputations or penetrating injuries proximal to the wrist and ankle
- Open or depressed skull fracture
- Facial injury with potential airway compromise
- Obvious chest injury w/ flail chest or multiple rib fractures
- Pelvis fractures (excludes hip fractures due to fall from the same level)
- Mangled extremities
- Extremity trauma with vascular deficit
- 2 or more proximal long bone fractures
- Trauma with burns
- Multiple Trauma with head injury and loss of consciousness

Mechanism Trauma
- Falls:
  - Adult >20 feet (1 story = 10 feet)
  - Child ≥10 feet or 2x the height of the child
- High risk auto crash (>40mph; intrusion >12" into passenger compartment; >18" of vehicle deformity)
- Ejection from motorized vehicle
- Motorcycle crash >20mph
- Auto vs Pedestrian; Auto vs Bicycle; Equestrian thrown or run over or with impact >20mph
- Extrication >20 minutes
- Rollover
- Hanging or near hanging
- Death in the same passenger compartment

Co-Morbid Factors (may increase index of suspicion for injuries)
- Age <14 yrs or >55 yrs
- Pregnancy >20 weeks
- Anticoagulation and bleeding disorders move up

Anatomic and/or Physiologic Trauma must go to Level 1 Trauma Center (University Main)

Mechanism ONLY may go to closest trauma center as directed by UMC Main consult

BLS - TRAUMA / BURN TX

Initiate TFD Assessment, Care and Treatments

Stabilize fractures and dress soft tissue injuries
Consider Spinal Motion Restriction (SMR)

Airway/Breathing

Assess for confined space inhalation injury with steam, smoke, toxic fumes or carbon monoxide

Suspicion of Herniation

IF S/Sx of ↑ ICP or brain herniation: Pupils: unilateral or bilateral dilation, asymmetric reactivity; and/or non-purposeful posturing

Burns

Dry chemical - brush off & rinse with copious amounts of water, cool burn area
Tar - don't attempt to remove tar
Remove clothing, jewelry, and prostheses from affected extremity if not adhered to skin
Cover wounds with dry clean dressings
Cover to avoid hypothermia
Use cool, damp dressings on smaller burns (≤ 15%)

Amputations

Keep amputated extremity cool, clean, dry
Stump: clean, dry, elevate
Partial amputation: Sterile water rinse, splint, dry dressing, elevate
Consider tourniquet

Fall Injury Hip Fractures (from same level)

ALS for assessment and interventions
Consider breakdown stretcher or pelvic binding
Evaluate and describe impact surface

ALS - TRAUMA / BURN TX

Initiate TFD Assessment, Care and Treatments

Airway/Breathing

Consider intubation
Consider cricothyrotomy
Consider needle thoracostomy

Suspicion of TBI

$EtCO_2$ monitoring ; maintain 35-45mmHg

Vascular Access/Fluid Resuscitation

Large bore x2
Monitor lung sounds
If SBP < 90mmHg administer NS 20mL/kg bolus, reassess breath sounds & may repeat until SBP > 90mmHg

Burns: BSA > 10% - fluid bolus

$$\frac{\text{LR 2-4mL x kg wt x \% TBSA}}{28} = \text{volume} \qquad \frac{\text{Volume}}{8} = \text{Rate/hour}$$

Pain Management - pain level ≥ 8

Morphine:

Adult Size (> 60kg) with injuries and/or burns - 5-10mg q 5 min IV titrate to effect; max dose 20mg

Pediatric Size (≤ 60kg) with injuries and/or burns - 0.1mg/kg in increments of 1-2mg q 5 min IV titrate to effect; max dose 10mg

Midazolam (Versed):

Adult and Pediatric Size 1-2mg IVP for refractory pain

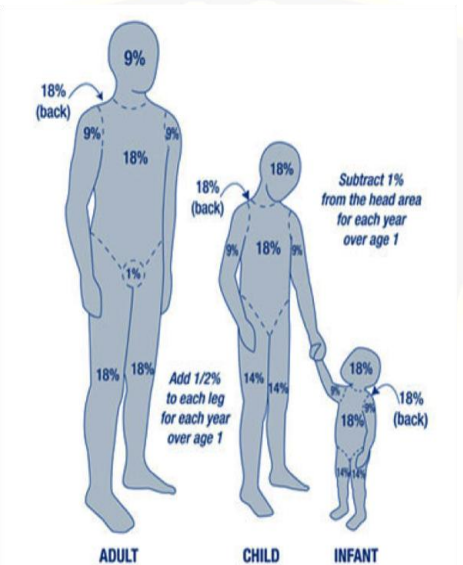
Ondansetron (Zofran) - for Nausea or Vomiting

Adult Size (> 30kg) 4mg IV over 2-5 minutes; if no improvement after 15 minutes may repeat x1

Pediatric Size (≤ 30kg) 0.15mg/kg IV; do NOT repeat dose

RULE OF NINES

- Tool for identifying Total Body Surface Area (TBSA) for Burns



APGAR NEWBORN SCALE

APGAR SCORING FOR NEWBORNS				
	Sign	**0 Points**	**1 Points**	**2 Points**
A	**Activity** (Muscle Tone)	Absent	Arms & Legs Flexed	Active Movement
P	**Pulse**	Absent	Below 100 bpm	Above 100 bpm
G	**Grimace** (Reflex Intensity)	No Response	Grimace	Sneeze, Cough, Pulls Away
A	**Appearance** (Skin Color)	Blue-Gray, Pale all over	Normal, Except Extremities	Normal, Entire Body
R	**Respiration**	Absent	Slow, Irregular	Good, Crying

- APGAR is performed at 1 and 5 minutes after mother delivers.
- An additional APGAR may be performed at 10 minutes after birth if problems have occurred with delivery/infant response
- Score 7-10 Normal
- 4 -7 May require stimulation or resuscitation interventions
- Score 3 and below require immediate resuscitation

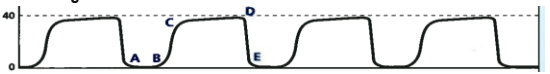
Average Vital Signs & Equipment Sizes for Newborn

Wt. Kg	Heart Rate	Resp.	Sys BP	Blade EET Size	Suction Catheter	NG Tube Foley
3.5 kg	130-150	40	70	0.1 - 3.5	6F	5-8F

CAPNOGRAPH I

Normal Capnograph **$EtCO_2$ 35- 45mmHg**

CO_2 mmHg



The capnograph is a waveform which represents varying $C0_2$ level throughout breath cycle. Waveform Characteristics: A-B = Baseline; D = End-Tidal Concentration; B-C = Expiratory Upstroke; D-E = Inspiration; C-D = Expiratory Plateau

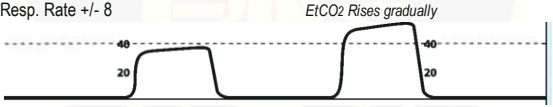
Bronchospasm/Asthma **$EtCO_2$ > 45mmHg**

Resp. Rate +/- 24 *Loss of Plateau*

Other Possible Causes: • Bronchospasm/COPD • Presence of a foreign body in the upper airway • Obstruction in the expiratory limb of the breathing circuit • Partially kinked or occluded artificial airway

Increasing $EtCO_2$ (Hypoventilation) **$EtCO_2$ >45mmHg**

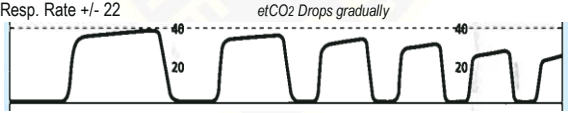
Resp. Rate +/- 8 *$EtCO_2$ Rises gradually*



Other Possible Causes: • Decrease in respiratory rate • Decrease in tidal volume • Increase in metabolic rate • Rapid rise in body temperature (malignant hyperthermia)

Decreasing $EtCO_2$ (Hyperventilation) **$EtCO_2$ < 35mmHg**

Resp. Rate +/- 22 *$etCO_2$ Drops gradually*

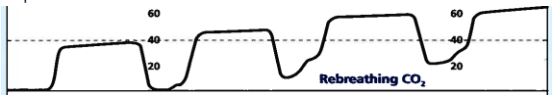


Other Possible Causes: • Increase in respiratory rate • Increase in tidal volume • Metabolic acidosis • Fall in body temperature

CAPNOGRAPH II

Rebreathing $C0_2$ **$EtCO_2$ > 45mmHg**

Resp. Rate +/- 14

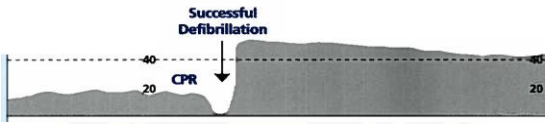


Other Possible Causes: • Faulty expiratory valve • Inadequate inspiratory flow • Partial rebreathing • Insufficient expiratory time

Cardiac Arrest *Change in Rescuer* Resp. Rate 12

Other Possible Causes: • Decreased or absent cardiac output • Sudden decrease in CO_2 values • Decreased or absent pulmonary blood flow

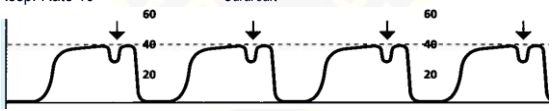
Return of Spontaneous Circulation Resp. Rate 12



Other Possible Causes: • Increase in cardiac output • Increase in pulmonary blood flow • Gradual increase in CO_2 production

Curare Cleft **35-45 mmHg**

Resp. Rate 16 *Curareaft*



<u>*Other Possible Causes*</u>: • Depth of cleft is proportional to degree of muscle relaxants • Patient is mechanically ventilated

*Assumes adequate circulation and alveolar gas exchange

HUMAN SERVICES REFERRAL PROGRAM (HSRP)

Assure Patient safety; determine complexity and urgency for medical and/or social assistance

Observe and document concerns, general impression, environment/safety, lack of services/subsistence, abuse/neglect, exploitation

Contact assigned case manager or health plan if appropriate

Provide real time intervention as appropriate and resources allow

Notify Law Enforcement, APS/CPS, Elder Shelter, Humane Society, City inspectors, etc via Fire Alarm (Communications)

Suspected psychological, physical or economic abuse, neglect or vulnerability, contact APS/CPS and remain on scene until Law Enforcement arrives

Submit referral; include Patient and emergency contact name, address, phone number and Patient disposition

District Management to follow up on repeat callers and recurrent issues per Frequent User Algorhythm - S:/Drive

To access HSRP form:

https://www.tucsonaz.gov/fire/QAIncident/index_v2.php

HSRP RESOURCE NUMBERS

Adult Protective Services	(877) 767-2385 881-4066 ext 216
ADHS Assisted Living Licensure	(602) 674-9775
AHCCCS Plans	
AHCCCS Member Services	(800) 331-5090
Bridgeway Health Care Plan	(866) 475-3129
University Family Care	(520) 874-5290 (800) 582-8686
Phoenix Health Plan	(602) 824-3700
APIPA - United Family Plan	(800) 348-4058
Health Choice - AZ	(800) 322-8670
Mercy Care Plan	(800) 624-3879
Animal Hoarding/Neglect: PAC	243-5904
Casa de los Niños	624-5600
Child Protective Services	(888) 767-2445
CODAC	327-4505
COMPASS HC - Desert Hope	624-5272
COPE	792-3293
Domestic Violence Assist - Emerge	795-4266 (888) 428-0101
Elder Shelter	327-2665 566-1919 crisis
Information and Referral - AZ 211	881-1794
La Frontera	884-9920
Crisis Team	218-8468
Our Family Services	323-1708 ext 410
Family Emergency Shelter	320-5122
PCOA Help Line	790-7262

HSRP RESOURCE NUMBERS

Pima County Health Nursing	
South Office	889-9543
North Office	243-2850
East Office	298-3888
Poison Control Center	626-6016
Primavera Adult Case Management	623-5111
CM Intake/ Men's Shelter	623-4300
Primavera Families Shelter	623-5111
Rape Crisis Center	327-1171
Rape Crisis Line	327-7273
Salvation Army (assist utilities/housing)	792-5411
Salvation Army Social Services	792-1111
So. AZ Mental Health (MAC Team)	622-6000
VAH Homeless Program	629-1839
VAH Telephone Linked Care	792-1450
Victim Witness	740-5525
Wingspan Anti-Violence Program	624-1779
Wingspan Crisis Line	624-0348

HOSPITAL PHONE NUMBERS

Hospital	Dedicated Line	EKG Line
Northwest Medical Center	(520 469-8800	(520) 469-8076
Oro Valley Hospital	(520) 901-3981	(520) 901-3508
St. Joseph's Hospital	(520) 886-8787	(520 873-3254
St. Mary's Hospital	(520) 622-2401	(520) 872-6238
Tucson Medical Center	(520) 324-2211	(520) 324-2209
UMC Main	(520) 694-4222	(520) 694-2463
UMC South	(520) 874-2285	(520) 874-2883
Veterans Administration	(520) 629-4661	(520)

PEDIATRIC REFERENCE CARD - Joules

AED	AGE	wt. lbs.	wt. kg.	MRX	joules	HR	RR	SBP	ETT	OPA
	Pre-term	3	1.5		3/6j	160	50-60	50-60	2.5-3.0	0
	Term NB	7	3		7/14j	140	40-60	70	3.0-3.5	0
P	1 mo	8	3.5	P		140	40-60	85	3.5	0
E	2 mo	9	4	E		140	30-60	85	3.5	0
D	3 mo	10	4.5	D		140	30-60	90	3.5	0
S	4 mo	11	5	S		135	30-50	90	3.5	0
	5 mo	12	5.5			135	30-50	90	3.5	0
P	6 mo	14	6		14/28j	135	30-50	90	3.5-4.0	1.0
A	7 mo	15	7	P		135	30-50	90	4.0	1.0
D	8 mo	17	7.5	A		130	24-40	90	4.0	1.0
S	9 mo	18	8	D		130	24-40	90	4.0	1.0
	10 mo	19	8.5	S		125	24-40	90	4.0	1.0
	11 mo	20	9			125	24-40	90	4.0-4.5	1.0

http://www.emedicinehealth.com/pediatric_vital_signs/article_em.htm
http://www.uptodate.com/online/content/Pediatric vital signs
Whaley & Wong 1991

BW DOUBLES AT 6 MO
BW TRIPLES BY 1 YR
BW QUAD BY 2 1/2 YRS

PEDIATRIC REFERENCE CARD - Joules

AED	AGE	wt. lbs.	wt. kg.	MRX	joules	HR	RR	SBP	ETT	OPA
P	**12 mo**	**22**	**10**		20/40j	120	24-40	90	4.5	2.0
E	18 mo.	24	11			120	22-36	90	4.5	2.0
D	2 yr	26	12	A		120	22-36	92	4.5	2.0
S	3 yr	30	13.5	D	30/60j	110	22-34	92	4.5-5.0	2.0
	4 yr	35	16	U		110	22-34	94	5.0	3.0
P	5 yr	40	18	L		110	22-34	94	5.0	3.0
A	6 yr	45	20.5	T	40/80j	100	20-24	96	5.5	3.0
D	7 yr	50	22.5			100	18-22	100	5.5	3.0
S	**8 yr**	**55**	**25**		50/100j	90	18-22	100	6.0 C	4.0-5.0
	9 yr	60	27	P	60/120j	90	18-22	102	6.0 C	4.0-5.0
A	10 yr	70	32	A		85	16-22	102	6.0-6.5 C	4.0-5.0
D	11 yr	80	36	D	70/140j	85	16-22	105	6.5 C	4.0-5.0
U	12 yr	90	41	S	80/160	85	14-20	110	6.5 C	4.0-5.0
L	13 yr	100	45		90/180j	80	14-20	110	7.0 C	4.0-5.0
T	14 yr	110	50			80	12-20	115	7.0-8.0 C	4.0-5.0

DOPAMINE REFERENCE CARD 400 mg/250 ml (1600 mcg/ml)

To determine infusion rate, find intersection of patient weight and dosage rate.

PATIENT WEIGHT

lbs	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198
kg	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
2.5	0.5	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	8
5.0	1	2	3	4	5	6	7	8	8	9	10	11	12	13	14	15	16	17
7.5	1	3	4	6	7	8	10	11	13	14	16	17	18	20	21	23	24	25
10.0	2	4	6	8	9	11	13	15	17	19	21	23	24	26	28	30	32	34
12.5	2	5	7	9	12	14	16	19	21	23	26	28	31	33	35	38	40	42
15.0	3	6	8	11	14	17	20	23	25	28	31	34	37	39	42	45	48	51
17.5	3	7	10	13	16	20	23	26	30	33	36	39	43	46	49	52	56	59
20.0	4	8	11	15	19	23	26	30	34	38	41	45	49	53	56	60	64	68

DOSE RATE mcg/kg/min

INFUSION RATE (gtt/min)

DOPAMINE REFERENCE CARD 400 mg/250 ml (1600 mcg/ml)

To determine infusion rate, find intersection of patient weight and dosage rate

PATIENT WEIGHT

DOSE RATE mcg/kg/min

lbs	209	220	231	242	253	264	275	286	297	308	319	330	341	352	363	374	385
kg	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175
2.5	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	16
5.0	18	19	20	21	22	23	23	24	25	26	27	28	29	30	31	32	33
7.5	27	28	30	31	32	34	35	37	38	39	41	42	44	45	46	48	49
10.0	36	38	40	41	43	45	47	49	51	53	54	56	58	60	62	64	66
12.5	45	47	49	52	54	56	59	61	63	66	68	70	73	75	77	80	82
15.0	53	56	59	62	65	68	70	73	76	79	82	84	87	90	93	96	98
17.5	62	66	69	72	76	79	82	85	89	92	95	98	102	105	108	112	115
20.0	71	75	79	83	86	90	94	98	101	105	109	113	116	120	124	128	131

INFUSION RATE (gtt/min)

TFD SPINAL MOTION RESTRICTION (SMR)

Indications:

- Apply spinal motion restriction to any patient identified to have a potential spine injury that might benefit from splinting and packaging
- A complete patient assessment should be performed prior to application and subsequent movement/transfer of patient following SMR procedure
- Documentation should be reflective of assessments and care rendered

Procedure:

Acceptable methods and tools that achieve spinal motion restriction. Listed from least invasive to most restrictive.

- Fowler's, semi-fowlers or supine positioning on gurney with cervical collar. Patient instructed to keep head movements to a minimum
- Child car seat with appropriate supplemental padding.
- Supine positioning on breakdown stretcher, scoop stretcher, secured with straps, appropriate padding, and head blocks.
  - Avoid log rolling movement adds benefits.
- Supine positioning with longboard, secured with straps, appropriate padding and head blocks.

Motor/Sensory Exam	Unreliable Patient Interactions
• Wrist/hand extension-bilaterally	• Language barriers; inability to communicate
• Foot plantar/dorsiflexion bilaterally	• Lack of Cooperation during exam
• Gross sensation in all extremities	• Evidence of Drug/Alcohol intoxication
• Check for paresthesia's	• Cognitive Impairment
	• Painful distracting injury: such as longbone